

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEBRASKA

MIXING & MASS TRANSFER
TECHNOLOGIES, LLC,
and PETER KOS, Ph.D.,

Plaintiffs,

v.

CITY OF LINCOLN, NEBRASKA,
and HDR ENGINEERING, INC.,

Defendants.

4:11CV3068

**MEMORANDUM
AND ORDER**

Defendants, the City of Lincoln, Nebraska, and HDR Engineering, Inc., have moved for “summary judgment of invalidity and non-infringement of U.S. Patent No. 5,811,009 (the ‘009 Patent’),” which is owned by Peter Kos, Ph.D., and licensed (by assignment) to Mixing & Mass Transfer Technologies, LLC (collectively, “Plaintiffs”). The motion will be denied with respect to Defendants’ claim that the ’009 Patent is invalid, but will be granted on the basis of non-infringement.

I. Introduction

Contending that the motion for summary judgment is premature, Plaintiffs have filed a motion requesting the court either to deny summary judgment or to grant a continuance. Plaintiffs’ motion, which is made pursuant to Federal Rule of Civil Procedure 56(d), will be denied in all respects.

Rule 56(d) provides that “[i]f a nonmovant shows by affidavit or declaration that, *for specified reasons*, it cannot present facts essential to justify its opposition [to a motion for summary judgment], the court may: (1) defer considering the motion or

deny it; (2) allow time to obtain affidavits or declarations or to take discovery; or (3) issue any other appropriate order.” [Fed. R. Civ. P. 56\(d\)](#) (emphasis supplied). In the absence of an affidavit or declaration showing what specific facts further discovery might uncover, a district court generally does not abuse its discretion in denying a motion for continuance and granting summary judgment on the basis of the record before it. See [Nolan v. Thompson](#), 521 F.3d 983, 986-87 (8th Cir. 2008); see also [Johnson v. United States](#), 534 F.3d 958, 965 (8th Cir. 2008) (Rule 56(d) affidavit should describe: “(1) what facts are sought and how they are to be obtained; (2) how these facts are reasonably expected to raise a genuine issue of material fact; (3) what efforts the affiant has made to obtain them; and (4) why the affiant’s efforts were unsuccessful.”).

Plaintiffs’ counsel, Shawna M. Bligh,¹ states the following in an affidavit executed on June 21, 2013:²

1. I am above the age of 18 and am counsel for Plaintiffs, Mixing & Mass Transfer Technologies, LLC and Peter Kos, Ph.D. in the above-captioned case.

2. Defendants assert a number of affirmative defenses to Plaintiffs’ Second Amended Complaint, including:

¹ Ms. Bligh entered her appearance in this action on January 28, 2013, following the withdrawal of Plaintiffs’ original counsel (filings [83](#), [85](#)).

² The affidavit is attached to a brief (filing [110](#)) filed in support of Plaintiffs’ Rule 56(d) motion. Although such filing is procedurally improper under [NECivR 7.1\(b\)\(2\)\(B\)](#) (“Evidentiary materials may be attached to the brief if the brief includes a listing of each item of evidence being filed, and the evidence citations within the brief provide hyperlinks to the evidence attached and offered in support of the factual statements. In all other cases, evidentiary materials may not be attached to the brief but rather must be filed separately with an index listing each item of evidence being filed and identifying the motion to which it relates.”), the affidavit will be considered.

- a. The existence of prior art, which would render the '009 Patent invalid or unenforceable.
- b. Plaintiffs['] claims are barred by the doctrine of laches.
- c. Defendants are not infringing on the '009 Patent.
- d. The '009 Patent is invalid because the alleged inventions therein were known and/or used by others and/or for anticipation under 35 U.S.C. § 102.
- e. The '009 Patent is invalid for obviousness under 35 U.S.C. § 103.
- f. The '009 Patent is invalid for failure to comply with the requirements of 35 U.S.C. § 112.
- g. The '009 Patent does not otherwise meet one or more requirement of Title 35 of the United States Code.

3. Defendants assert two counterclaims, including a Declaration of Non-Infringement and a Declaration of Invalidity.

4. Plaintiffs have served their First Requests for Production of Documents, First Interrogatories and First Requests for Admissions on Defendants. Defendants still have time remaining under which to answer or respond to these discovery requests. Notwithstanding this, however, Plaintiffs have received no responses or answers to these requests.

5. Plaintiffs also seek to potentially depose Dr. Glen Draigger of CH2M-Hill, as well as representatives of HDR Engineering, Inc. and the City of Lincoln, Nebraska regarding certain statements made respecting the '009 Patent and potential infringement of same.

6. This information is important because it goes directly to Plaintiffs' claims of infringement, as well as Defendants['] affirmative defenses and counterclaims.

7. Defendants' Motion for Summary Judgment on Invalidity and Non-Infringement argues that the uncontroverted facts prove that Defendants are not infringing the '009 Patent or that the '009 Patent is invalid.

8. Importantly, Plaintiffs lack evidence to rebut or otherwise respond to Defendants' purported uncontroverted facts[,] or such facts cannot be presented[,] that they are not infringing the '009 Patent or that the '009 Patent is invalid, at this time, as Plaintiffs need further discovery pursuant to Fed. R. Civ. P. 56(d).

(Filing [110-1](#)).

In paragraph 2 of her affidavit, counsel has listed seven affirmative defenses that are alleged in Defendants' answer. However, the pending motion for summary judgment touches upon only two of those defenses. That is, Defendants argue: (1) there is no infringement; and (2) the patent is indefinite and therefore invalid under 35 U.S.C. § 112. More specifically, Defendants (1) deny infringement because their wastewater treatment facility (a) does not return a portion of the settled sludge from the final clarifier to the mainstream treatment process, as required by element (b) of Claim 18 of the '009 Patent, and (b) does not transfer any supplemental nitrifiers from the sidestream nitrification system to the mainstream nitrification process, as required by element (d) of Claim 18 of the '009 Patent; and (2) argue indefiniteness because Plaintiffs, in responding to a request for admission, allegedly objected that a phrase which is used in the preamble to Claim 18 of the '009 Patent to describe the invention, *i.e.*, "activated sludge biological wastewater treatment process," is nonsensical.

Similarly, while it is true that Defendants have counterclaimed, they are seeking only limited declaratory relief in connection with the pending motion for summary judgment. Defendants are only requesting a declaration of non-infringement and a declaration of invalidity, for the specific reasons outlined above.

The affidavit of Plaintiffs' counsel fails to identify any relevant facts that Plaintiffs hope to learn through discovery. She merely expresses a desire to depose "Dr. Glen Draigger of CH2M-Hill, as well as representatives of HDR Engineering, Inc. and the City of Lincoln, Nebraska regarding certain statements made respecting the '009 Patent and potential infringement of same."

It is claimed in Plaintiffs' supporting brief (1) that "[r]epresentatives of HDR and the City authored a paper entitled '*Prenitrification and Seeding for Enhanced Nitrification*'" that "proposed a method of treatment to be utilized as part of the design and reconstruction at the Theresa Street Wastewater Treatment Plant"; (2) that "[t]his paper was the basis of a presentation by HDR and the City at a Water Environment Federation Conference in November 2004"; (3) that "[f]ollowing the presentation, Dr. Glen Daigger [*sic*] of CH2M-Hill approached representatives of HDR and the City" and "informed these representatives that the method or process of wastewater treatment that was intended to be used at the Theresa Street Wastewater Treatment Facility was patented technology, specifically, that the process or method was protected under the '009 Patent"; (4) that "representatives of HDR and the City were so concerned about possible infringement that they contacted the owner and exclusive licensee of the '009 Patent, Dr. Peter Kos . . . and Mixing & Mass Transfer Technologies, LLC ('M2T')"; (5) that "representatives of HDR and M2T met at the Omaha office of HDR on August 24, 2006, to discuss the '009 [P]atent"; (6) that "[a]nother meeting between representatives of HDR, the City and M2T occurred on May 6, 2008, at the Theresa Street Wastewater Treatment Facility to discuss the '009 Patent;"; (7) that "[d]uring the meeting of May 6, 2008, representatives of HDR admitted that what was presented in the paper entitled '*Prenitrification and Seeding for Enhanced Nitrification*' was what was actually intended in the design and actual reconstruction of the Theresa Street Wastewater Treatment Facility"; and (8) that "[w]hile representatives of HDR indicated that they could change the operation of the Theresa Street Wastewater Treatment Facility so that the design and reconstruction would not infringe the '009 Patent, representatives of the City rejected HDR's proposed changes to the operation, opting instead to proceed with the design and reconstruction as set forth in the paper" (filing [110](#) at CM/ECF 2-3).

Even though Plaintiffs should have first-hand knowledge of facts (4) through (8) listed above, no admissible evidence has been presented by them to establish the

truth of any of these facts.³ Nor have Plaintiffs shown by affidavit or declaration that evidentiary support might be obtained through discovery. Defendants, on the other hand, have presented evidence that the Theresa Street Wastewater Treatment Facility does not operate in the manner described in the “Prenitrification and Seeding for Enhanced Nitrification” paper. Ron Sova, a HDR representative, has declared under penalty of perjury that he presented the paper at the 2004 conference, that the paper was merely a proposal, and that since start-up the Theresa Street Facility has not utilized a return activated sludge line as depicted in the paper (and described in Claim 18(b)); rather, all settled sludge in the final clarifier has either been sent to a “prenitrification basin” or else been disposed of (filing [100-2](#), ¶¶ 13, 15, 16). Mr. Sova has also declared that the paper, which itself is in the record as Defendants’ Exhibit 1 (filing [100-1](#)), differs from Claim 18(d) of the ’009 Patent because it depicts a process where the transfer of supplemental nitrifiers is made to the “mainstream inlet line” and not the “mainstream nitrification process” (filing [100-2](#), ¶ 17). On the record presented, it does not appear that granting Plaintiffs a continuance to depose Dr. Draigger⁴ and Defendants’ representatives would be productive.

Ms. Bligh indicates in paragraph 4 of her affidavit that Defendants have not responded to certain requests for production of documents, interrogatories, and requests for admissions. However, these discovery requests were not served until June 3, 2013 (filing [104](#)), and June 18, 2013 (filing [108](#)), 2-4 weeks after Defendants

³ Defendants’ evidence generally establishes the first two facts but shows the conference was held in October 2004. *See* Defendants’ Exhibit 1 (filing [100-1](#)); Declaration of Ron Sova dated May 17, 2013, ¶ 13 (filing [100-2](#) at CM/ECF 3). Mr. Sova has also declared that the meeting at the Theresa Street Facility took place on August 24, 2006 (instead of May 6, 2008), and that to the best of his knowledge, “this is the only time that anyone representing m²t has been to the Theresa Street Facility.” Declaration of Ron Sova dated May 31, 2013, ¶ 2 (filing [103-1](#) at CM/ECF 1). He adds that “m²t was told repeatedly at this meeting that the Theresa Street Facility did not infringe the claims of their ’009 Patent.” *Id.*, ¶ 4 (filing [103-1](#) at CM/ECF 1).

⁴ Dr. Draigger’s purported statement appears irrelevant in any event.

filed their motion for summary judgment.⁵ Defendants had previously filed a motion to stay discovery, which I granted on July 17, 2013 (filing [116](#)). Counsel's affidavit, including the conclusory statement in paragraph 8 regarding Plaintiffs' lack of evidence and need for discovery, does not provide good cause for lifting the stay.

While it has been stated that Rule 56(d) "should be applied with a spirit of liberality," [Jacobs v. PT Holdings, Inc., No. 8:11CV106, 2012 WL 705772, *2 \(D.Neb. Mar. 2, 2012\)](#) (quoting [United States ex. rel. Bernard Casino Magic Corp., 293 F.3d 419, 426 \(8th Cir. 2002\)](#)), it "is not a shield that can be raised to block a motion for summary judgment without even the slightest showing by the opposing party that his opposition is meritorious." [Id.](#) (quoting [Wilmar Poultry Co. v. Morton-Norwich Prods., Inc., 520 F.2d 289, 297 \(8th Cir. 1975\)](#)). Because Plaintiffs have failed to meet the low burden of proof required by Rule 56(d), their motion will be denied in all respects.

II. Undisputed Facts

Under our local rules, a party moving for summary judgment "must include in the brief in support of the summary judgment motion a separate statement of material facts about which the moving party contends there is no genuine issue to be tried and that entitles the moving party to judgment as a matter of law." [NECivR 56.1\(a\)\(1\)](#). "The party opposing a summary judgment motion must include in its brief a concise response to the moving party's statement of material facts." [NECivR 56.1\(b\)\(1\)](#). "Properly referenced material facts in the movant's statement are considered admitted unless controverted in the opposing party's response." [Id.](#) See also [Fed. R. Civ. P. 56\(e\)\(2\), \(3\)](#) ("If a party . . . fails to properly address another party's assertion of fact as required by Rule 56(c), the court may . . . consider the fact undisputed for purposes

⁵ As will be detailed below, Plaintiffs were offered the opportunity to tour the Theresa Street Facility in December 2012 and March 2013 to verify that the facility operates in the manner described by Defendants, but the offers were not accepted.

of the motion . . . [and] grant summary judgment if the motion and supporting materials—including the facts considered undisputed—show that the movant is entitled to it[.]”).

Because Plaintiffs have failed to respond to Defendants’ motion for summary judgment, except by filing a non-meritorious Rule 56(d) motion, the statement of material facts that is set forth in Defendants’ supporting brief is deemed admitted (except as otherwise indicated below). The statement reads:

1. Plaintiff Mixing & Mass Transfer Technologies, LLC is a limited liability corporation organized and existing under the laws of the Commonwealth of Pennsylvania, with its principal place of business at 141 Blackberry Lane, Boalsburg, Pennsylvania. (ECF [26](#), 2d Am. Compl., ¶2; ECF [27](#), Answer and Countercl., ¶2).

2. Plaintiff Peter Kos, Ph.D. (“Dr. Kos”) is the inventor of United States Patent No. 5,811,009 (the “’009 Patent”) entitled: “Method and System for Improved Biological Nitrification of Wastewater.” (*Id.* at ¶¶3).

3. Defendant HDR Engineering, Inc. is engaged in the business of providing architectural, engineering, and consulting services, with its principal place of business at 8404 Indian Hills Drive, Omaha, Nebraska. (*Id.* at ¶¶4).

4. Defendant City of Lincoln is a municipality located within the County of Lancaster, Nebraska. (*Id.* at ¶¶5).

5. This action arises out of the Second Amended Complaint filed by Plaintiffs Mixing & Mass Transfer Technologies, LLC and Peter Kos, Ph.D. (collectively “m²t”) against HDR and the City of Lincoln, Nebraska (collectively “HDR”) with allegations of patent infringement of the ’009 Patent. (ECF [26](#), 2d Am. Compl.).

6. HDR’s Answer and Counterclaim contains allegations of non-infringement and invalidity of the ’009 Patent. (ECF [27](#), Answer and Countercl.).

7. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338. (ECF [26](#), 2d Am. Compl., ¶6; ECF [27](#), Answer and Countercl., ¶6).⁶

8. The parties agree that the District of Nebraska is the proper venue for this action under 28 U.S.C. § 1400(b). (*Id.* at ¶¶7).

9. This Court conducted a Markman⁷ hearing and entered its claim construction ruling on November 8, 2012. (ECF [80](#), Markman Order).

10. Plaintiffs accuse HDR's Theresa Street Facility of infringing Claim 18 of the '009 Patent. No other claim of the '009 Patent is being asserted. (*Id.* at 1).⁸

11. After entry of the Markman Order, HDR notified m²t and its counsel that given the construction of claim terms, the accused Theresa Street Facility does not infringe any claims of the '009 Patent. (ECF [95-1](#), Ex. 1, 12/13/12 Letter from Peterson to Novak and Jeffries re: Facility Tour).

12. Counsel for HDR offered Plaintiffs' counsel a tour of the Theresa Street Facility in order to substantiate HDR's non-infringement claims. (*Id.*). The tour was scheduled for December 17, 2012 (*id.*), but was cancelled by prior counsel, who abruptly withdrew representation on December 27, 2012. (ECF [82](#), Mot. to Withdraw).

⁶ This is a legal conclusion. However, the court finds it has subject matter jurisdiction because the action arises under federal patent law.

⁷ [*Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 373 \(1996\)](#) (holding that claim construction is a matter of law for the court).

⁸ The '009 Patent contains three independent claims (1, 11, and 18), but "[i]n this case, Plaintiffs [only] contend that Defendants have infringed claim 18" (Plaintiffs' Opening Claim Construction Brief (filing [57](#)) at CM/ECF 13).

13. After former counsel withdrew, counsel for HDR invited m²t and its present counsel to inspect the Theresa Street Facility to verify the methods of its operations and consequential non-infringement under the Court's claim construction. (ECF [95-2](#), Ex. 2, 01/02/13 Rule 11 Letter and Motion from Peterson to m²t Principal and Dr. Kos; ECF [95-3](#), Ex. 3, 03/18/13 Email from Peterson to Bligh providing copy of Rule 11 Letter; ECF [95-4](#), Ex. 4, 03/26/13 Letter from Peterson to Bligh re: Facility Tour).

14. m²t's present counsel ignored HDR's invitation to visit the Theresa Street Facility and compare the method of its operation to the claims of the '009 Patent.⁹

15. HDR then served Requests for Admissions, each utilizing excerpts from Claim 18, including those terms which the Court spent substantial time defining. (ECF [95-5](#), Ex. 5, Pls.' Resps. to Reqs. for Admissions).

16. The Requests for Admissions illustrate that the accused Theresa Street Facility does not infringe Claim 18¹⁰ as it neither:

⁹ No evidence is cited in support of this statement. In an email dated June 3, 2013, Plaintiffs' counsel indicated that her clients felt there was no need to tour the facility (filing [103-3](#) at CM/ECF 2).

¹⁰ Plaintiffs are not deemed to have admitted the legal conclusion that "the accused Theresa Street Facility does not infringe Claim 18," nor are they deemed to have admitted Defendants' characterization that the requests for admission "illustrate" non-infringement or establish either bullet-point statement of fact. Plaintiffs denied a request to "[a]dmit that the Theresa Street Facility does not return any portion of the settled sludge from the final clarifier to the mainstream treatment process," stating: "Upon information and belief, most of the settled sludge from the final clarifiers at the Theresa Street Facility is returned to the mainstream treatment process." (Filing [95-5](#) at CM/ECF 2, Response to Request for Admission No. 4). Plaintiffs also denied a request to "[a]dmit that the supplemental biological nitrifiers produced in the sidestream biological nitrification system at the Theresa Street Facility are not transferred to the mainstream nitrification process," stating: "The nitrifiers produced in the sidestream nitrification process at the Theresa Street Facility are transferred to

- returns any portion of the settled sludge from the final clarifier to the mainstream treatment process (as required by Claim 18(b)); nor
- transfers the supplemental nitrifiers from the sidestream nitrification process to the mainstream nitrification process (as required by Claim 18(d)).

(*Id.* at Resp. Nos. 4, 8, & 11).

17. m²t objected to virtually all the Requests for Admissions as “vague and ambiguous,” even though the requests cited Claim 18 verbatim. (*Id.* at Resp. Nos. 7, 8, 9, 10, 12, 13, 14 & 15). m²t also stated that the preamble to every claim of the ’009 Patent which requires “an activated sludge biological wastewater treatment process...” “Does not make sense.” (*Id.* at Resp. No. 3).¹¹

18. HDR also propounded Interrogatories upon m²t. In response to Interrogatory No. 7 requesting Plaintiffs [to] set forth in detail how they believe the Theresa Street Facility infringes Claim 18, m²t did not respond with the customary claim charts or a written analysis comparing the Theresa Street Facility methods to Claim 18 but rather responded:

ANSWER TO NO. 7. The Theresa Street Facility designed by HDR Engineering, Inc. for the City of Lincoln, Nebraska utilizes wastewater treatment processes that perform each limitation of Claim 18 of the ’009 Patent or

the mainstream biological process, which includes the mainstream nitrification process.” (Filing [95-5](#) at CM/ECF 3, Response to Request for Admission No. 11).

¹¹ The cited evidence does not support Defendants’ second statement of fact in paragraph 17. The evidence instead shows Plaintiffs were asked to admit that they “are accusing the Theresa Street Facility of being an activated sludge biological wastewater treatment process,” to which they responded: “Plaintiffs object to Request No. 3 because it does not make sense and as such is not capable of being admitted or denied. The Theresa Street Facility is not a ‘process.’ The Theresa Street Facility is a wastewater treatment plant.” (Filing [95-5](#) at CM/ECF 1)

an equivalent of each limitation of Claim 18. Plaintiffs would direct Defendants to the WEFTEC paper entitled “Prenitrification and Seeding for Enhanced Nitrification” and to other documents already produced in the course of this litigation.

(ECF [95-6](#), Pls.’ Answers to Interrogs. at 3-4).

19. HDR presented a paper at the WEFTEC Conference concerning a proposal for the Theresa Street Facility entitled “Prenitrification and Seeding for Enhanced Nitrification” (the “White Paper”) on or about October 4, 2004. (Ex. 1 [(filing [100-1](#))], White Paper). The presentation and the White Paper predated the construction of the accused portion of the Theresa Street Facility. The White Paper expressly identifies it as a “proposed” concept. (Ex. 1, White Paper at 1).

20. HDR Engineer Ron Sova testifies that the Theresa Street Facility does not operate in the manner depicted in the White Paper. Particularly, no portion of the settled sludge from the final clarifier is returned to the mainstream treatment process as required by element 18(b). Rather, the settled sludge from the final clarifier is sent to the sidestream nitrification process or disposed. Additionally, any supplemental nitrifiers produced in the sidestream nitrification process at the Theresa Street Facility are transferred to the mainstream inlet line and not to the mainstream nitrification process as required by element 18(d). (Ex. 2 [(filing [100-2](#))], Decl. of Ron Sova at ¶¶4, 5, 6, 8 & 11).¹²

21. Even if the Theresa Street Facility operated as shown in the White Paper (which it does not), it still does not infringe Claim 18 of the ’009 Patent:¹³

¹² While paragraph 20 of Defendants’ statement of material facts accurately reflects Mr. Sova’s affidavit testimony, and Plaintiffs are deemed to have admitted that Mr. Sova has so testified, they are not deemed to have admitted the truth of the facts stated by Mr. Sova.

¹³ Again, Plaintiffs are not deemed to have admitted the legal conclusion that “the Theresa Street facility . . . does not infringe Claim 18 of the ’009 Patent.”

a. The White Paper does not depict a portion of the settled sludge from the clarifier being returned to the “mainstream treatment process” as required by 18(b). Rather, it depicts a portion of the settled sludge being returned to the mainstream inlet line—a portion of the mainstream distinct from the “mainstream treatment process.” (Ex. 1, White Paper, Fig. 3, at 6).

b. Nor does the White Paper depict the transfer of supplemental nitrifiers from the “sidestream nitrification process” to the “mainstream nitrification process” as required by element 18(d). Rather, the White Paper depicts a process where the transfer of supplemental nitrifiers is made to the mainstream inlet line and not the narrowly-construed “mainstream nitrification process.” (Ex. 1, White Paper, Fig. 4, at 7).

22. m²t accused HDR of literal infringement and infringement under the doctrine of equivalents. (ECF [26](#), 2d Am. Compl.).

23. HDR propounded Requests for Production upon m²t. In response to Request No. 19 for all documents evidencing, supporting or tending to support Plaintiffs’ contention that the Theresa Street Facility meets, either literally or under the doctrine of equivalents, the limitations of Claim 18, m²t responded by objecting to the term “doctrine of equivalents” as “vague and ambiguous.”

RESPONSE TO NO. 19. Objection. Plaintiffs object to this Request as vague and ambiguous as to “doctrine of equivalents.” Plaintiffs further object to the extent that this Request calls for a legal conclusion or requires Plaintiffs to speculate as to the meaning of “doctrine of equivalents....”

(ECF [95-7](#), Pls.’ Resps. to Reqs. for Production of Documents at 10).

24. m²t has propounded no discovery upon Defendants.¹⁴

(Filing [99](#) at CM/ECF 5-8) (hyperlinks added).

¹⁴ This statement is unsupported and, in any event, no longer true.

III. The '009 Patent

To better understand of the questions of law presented by Defendants' motion for summary judgment, it is necessary to review portions of the patent specification, including the precise requirements of Claim 18.¹⁵ Attention must also be given to the court's construction of certain disputed terms and phrases that are used in Claim 18.

A. Overview

"The present invention entails a method and system for enhancing biological nitrification in a wastewater treatment process" ('009 Patent, abstract (filing [58-2](#) at CM/ECF 1)). "[T]he nitrification step basically entails converting the ammonia nitrogen, $\text{NH}_3\text{-N}$, to nitrite or nitrate, both referred to as NO_x ." ('009 Patent, 3:57-60 (filing [58-2](#) at CM/ECF 8)).

"[M]any conventional activated sludge wastewater treatment processes accomplish nitrification in an aerobic or oxic treatment zone" where "the wastewater containing the ammonia nitrogen is subjected to aeration and this gives rise to a microorganism culture that effectively converts the ammonia nitrogen to NO_x ." (*id.*). The '009 Patent utilizes this nitrification method. Thus, element (a) of Claim 18 specifies that the so-called "mainstream nitrification process" must include "at least

¹⁵ A patent application must include a specification that "contain[s] a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, . . . to make and use the same, . . ." [35 U.S.C. § 112\(a\)](#). The specification must "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." [35 U.S.C. § 112\(b\)](#). "Generally speaking, an accused device must come within the language of a claim to be an infringement thereof . . . because the patentee is entitled to nothing beyond what he is allowed in his claims." [Criner v. Micro-Westco, Inc.](#), [139 F.2d 681, 683 \(8th Cir. 1944\)](#).

one aerobic treatment zone” (’009 Patent, 14:13-16 (filing [58-2](#) at CM/ECF 13)). It is not disputed that the Theresa Street Facility meets this requirement.

Following treatment, the wastewater is transferred to a final clarifier (settling tank). Element (b) of Claim 18 requires “returning at least a portion of the settled sludge from the final clarifier to the mainstream treatment process.” (’009 Patent, 14:17-18 (filing [58-2](#) at CM/ECF 13)). This step is in dispute.

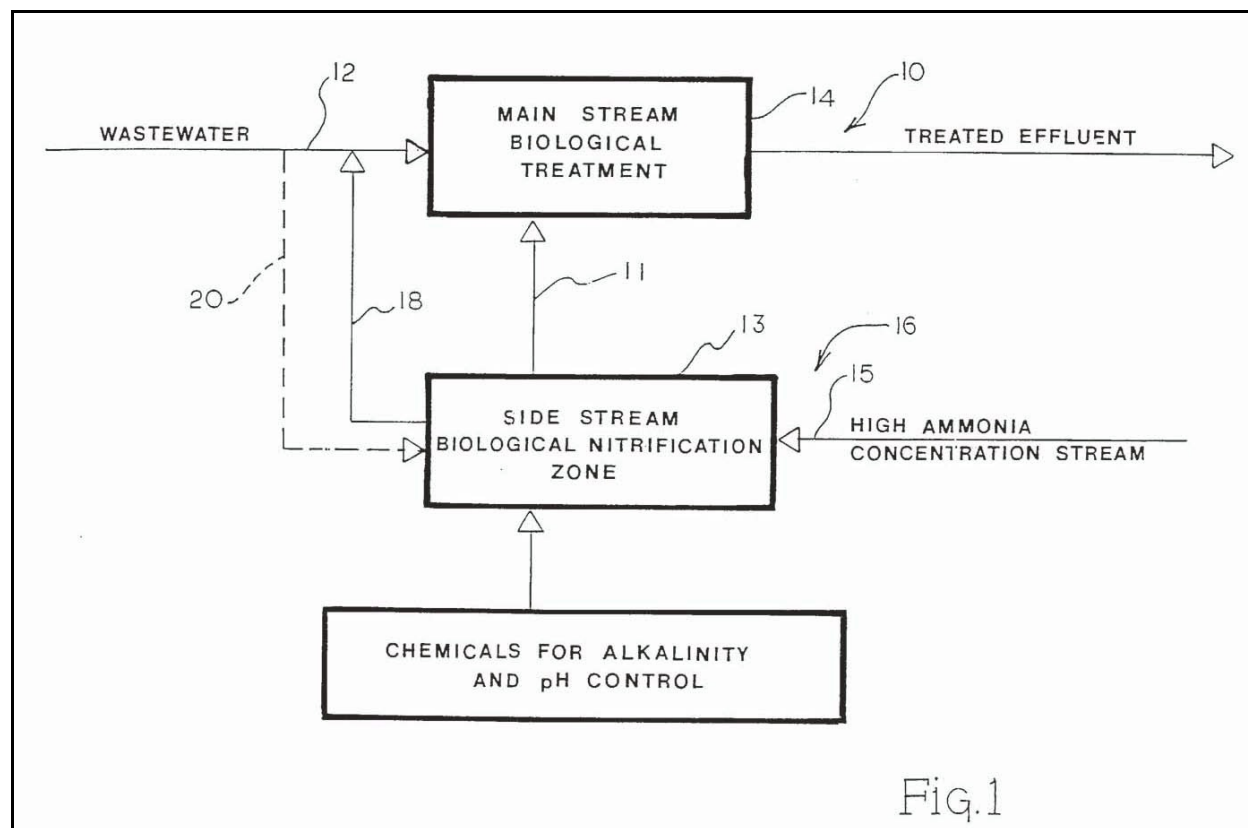
In addition to the mainstream nitrification process, the invention calls for a “sidestream biological nitrification system” that “is operated at conditions which maximize production of nitrifiers [*i.e.*, nitrifying bacteria] therein” (’009 Patent, abstract (filing [58-2](#) at CM/ECF 1)). This process is described in element (c) of Claim 18 (’009 Patent, 14:19-24 (filing [58-2](#) at CM/ECF 13)). It is not disputed that the Theresa Street Facility has a sidestream biological nitrification system.

“Afterwards, the resulting nitrifiers produced in the sidestream nitrification zone are directed into the mainstream where the nitrifiers function to enhance nitrification in the mainstream and allows [*sic*] operation at low sludge retention time conditions where nitrification otherwise¹ could not be sustained” (’009 Patent, abstract (filing [58-2](#) at CM/ECF 1)). Claim 18 (d) specifies that the nitrifiers are transferred from the sidestream to the “mainstream nitrification process” (’009 Patent, 14:26-30 (filing [58-2](#) at CM/ECF 13)). Defendants contend that simply transferring the nitrifiers to the mainstream, upstream from the “mainstream nitrification process,” does not satisfy Claim 18(d).

“Normally, the process design for sludge age [*i.e.*, average retention time] in a conventional nitrification process calls for the sludge age to be designed to be at least 200% of the critical or minimum sludge age [for nitrification]” (’009 Patent, 2:50-53 (filing [58-2](#) at CM/ECF 7)). The present invention allows a wastewater treatment system to be designed using a smaller safety factor because “the sidestream process produces an abundant supply of supplemental nitrifiers that . . . assist[] in carrying

out the nitrification process in the mainstream” (’009 Patent, abstract (filing [58-2](#) at CM/ECF 1)). This improvement is reflected in element (e) of Claim 18. The pending motion for summary judgment is not concerned with this element, which was the subject of an earlier motion. *See* Memorandum and Order entered August 17, 2012 (filing [75](#)).

Depicted below is “a schematic illustration of the enhanced biological nitrification process and system of the present invention” (’009 Patent, 3:29-31 (filing [58-2](#) at CM/ECF 8)), which is identified in the ’009 Patent as Figure 1:



(’009 Patent, Figure 1 (filing [58-2](#) at CM/ECF 2)).

“[T]he biological nitrification process of the present invention is indicated generally by the numeral 10” in Figure 1 (’009 Patent, 4:15-17 (filing [58-2](#) at CM/ECF 8)) (boldface in original).

In this process influent wastewater is directed along a mainstream **12** through a mainstream biological treatment process **14**. The mainstream biological treatment process can include a series of various treatment zones including one or more anaerobic zones, one or more aerobic (oxic) zones, or one or more anoxic zones. However, it is contemplated that in the present process, the mainstream biological treatment process **14** would include at least a nitrification zone for converting ammonia nitrogen $\text{NH}_3\text{—N}$ to NO_x . Basically, the mainstream biological treatment area or zones **14** would produce a treated or purified effluent that could be discharged into a creek, river, lake, etc.

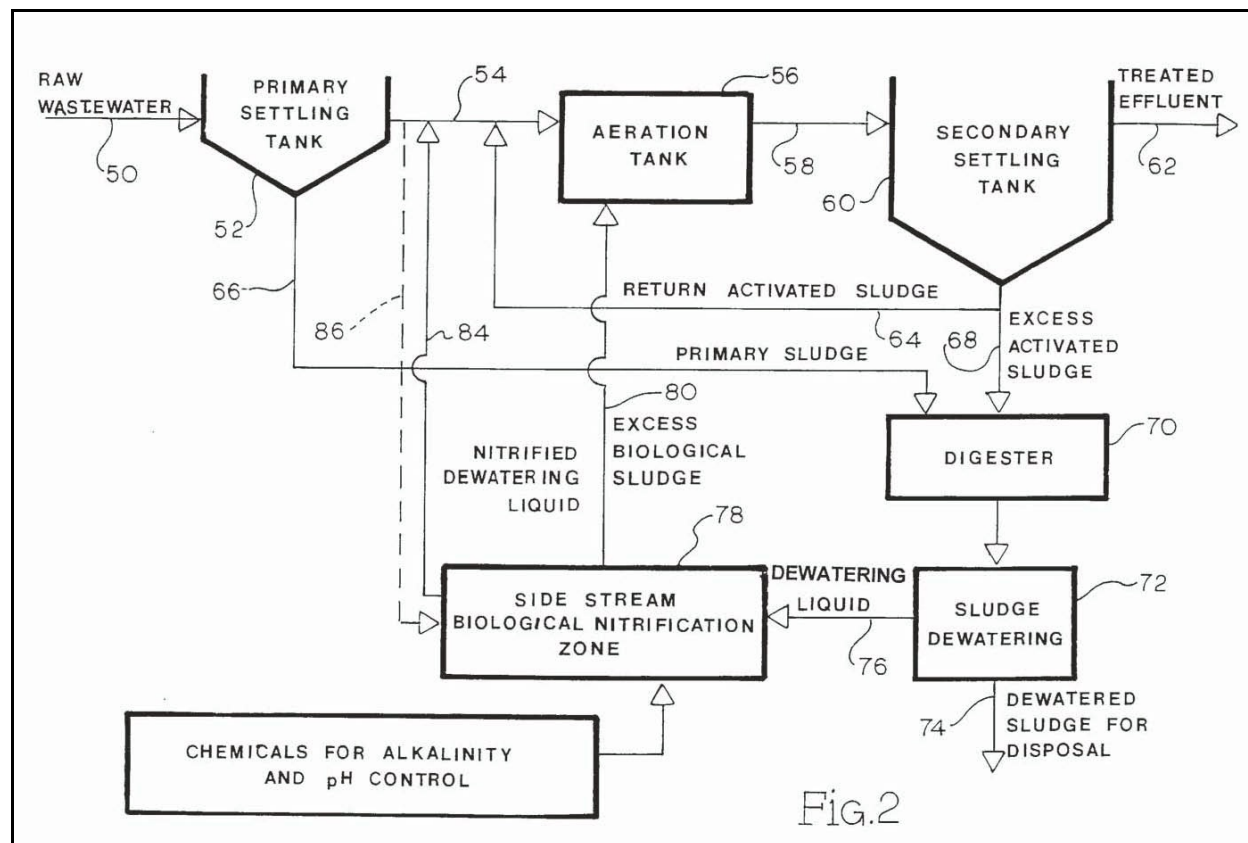
(’009 Patent, 4:17-28 (filing [58-2](#) at CM/ECF 8)) (boldface in original). In addition to the mainstream biological treatment area or zones, “the present invention entails a sidestream nitrification system indicated generally by the numeral **16**” (’009 Patent, 4:36-37 (filing [58-2](#) at CM/ECF 8)) (boldface in original).

Basically, the sidestream nitrification system **16** produces supplemental nitrifiers that are conveyed or transferred to the mainstream **12** where the supplemental nitrifiers aid or assist in the mainstream nitrification process.

To produce the supplemental biological nitrifiers, the present invention entails directing a sidestream **15** into a sidestream nitrification zone or reactor **13**. It is contemplated that the sidestream being fed or directed into the sidestream nitrification zone **13** would have a relatively high ammonia concentration compared to the ammonia concentration found in the influent wastewater being directed into and through the mainstream process.

(’009 Patent, 4:38-49 (filing [58-2](#) at CM/ECF 8)) (boldface in original).

Figure 2 of the ’009 Patent is “a schematic illustration of the enhanced biological nitrification process and system of the present invention showing a particular process and system design” (’009 Patent, 3:32-39 (filing [58-2](#) at CM/ECF 8)). It is depicted below:



('009 Patent, Figure 2 (filing [58-2](#) at CM/ECF 3)). The patent specification describes this particular process and system design in the following manner:

Now turning to FIG. 2 and the process shown therein, it is seen that wastewater is directed into inlet line 50 which leads to a primary clarifier 52. Primary clarifier 52 produces settled sludge and primary clarifier effluent which is directed into a mainstream inlet line 54. From inlet line 54 the primary clarifier supernatant is directed into a mainstream treatment area or a series of mainstream treatment zones. In the case of the present disclosure, the mainstream treatment area includes at least one aeration tank 56. This of course is utilized for mainstream nitrification. As pointed out above, it should be appreciated that the mainstream treatment area could include any number of other treatment zones such as anaerobic, aerobic, or anoxic. From the main treatment area or the main treatment zone or zones, the treated wastewater is directed through a secondary clarifier 60 that directs a treated or purified effluent out outlet line 62. Separated sludge is directed

out the bottom of secondary clarifier **60** and a portion of it is returned to the mainstream via a return activated sludge line **64**. The return activated sludge is mixed with the incoming influent wastewater in line **54** to form a mixed liquor that is subsequently treated in the mainstream treatment area or the mainstream treatment zone or zones (in this case the aeration tank **56**).

Some of the sludge directed from the secondary clarifier **60** is referred to as excess activated sludge or waste sludge and that is directed through line **68** to a digester **70** or another sludge stabilization process. Also, primary sludge collected by the primary clarifier **52** is directed into line **66** and into the digester **70**. . . . Once the digestion process has been completed the digested sludge is directed to a sludge dewatering station **72**. There the sludge is separated into dewatered sludge which is directed out line **74** and dewatering liquid which is directed through line **76** to a sidestream nitrification system or zone **78**. There the dewatering liquid is subjected to nitrification and . . . would have a high concentration of ammonia nitrogen and would typically be at an elevated temperature compared to the influent wastewater passing through the mainstream of the process. . . . [S]upplemental biological nitrifiers are produced in the sidestream nitrification system **78** and these supplemental nitrifiers are conveyed to the mainstream via line **84**. There the supplemental nitrifiers combined with nitrifiers produced in the aeration tank **56** and the combined nitrifiers act to effectuate complete and effective nitrification in the mainstream and particularly in aeration tank **56** of the example shown. It should be also noted that excess biological sludge full of nitrifiers held in the sidestream nitrification system **78** can be conveyed to the mainstream and particularly through the aeration tank **56** via line **80**.

('009 Patent, 5:39-6:23 (filing [58-2](#) at CM/ECF 9)) (boldface in original).

B. Claim 18

The Theresa Street Wastewater Treatment Facility is accused of infringing Claim 18 of the '009 Patent, which contains 5 steps:

18. An activated sludge biological wastewater treatment process having enhanced biological nitrification comprising the steps of:

(a) directing wastewater through a mainstream nitrification process¹⁶ including at least one aerobic treatment zone and a final clarifier that separates purified supernatant from settled sludge;

(b) returning at least a portion of the settled sludge from the final clarifier to the mainstream treatment process;¹⁷

(c) producing supplemental biological nitrifiers¹⁸ in a sidestream¹⁹ by directing a stream having a relatively high concentration of ammonia into a sidestream biological nitrification system and nitrifying the same

¹⁶ The phrase “mainstream nitrification process” is defined to include “[t]he portion of the mainstream treatment process in which mainstream wastewater is nitrified, meaning ammonia nitrogen in the mainstream, $\text{NH}_3\text{—N}$, is converted to nitrite or nitrate, both referred to NO_x . This portion of the mainstream treatment process takes place in the aerobic treatment zone(s).” Memorandum and Order entered November 8, 2012 (“Markman Order”) (filing [80](#) at CM/ECF 2).

¹⁷ A “mainstream treatment process” is “a biological suspended growth wastewater treatment process designed to treat a wastewater stream and produce treated or purified effluent, which may include a series of treatment zones, but which excludes any sidestream or sidestream treatment process.” Markman Order (filing [80](#) at CM/ECF 3).

¹⁸ The parties agree that the phrase “supplemental biological nitrifiers” means “nitrifying bacteria produced outside of the mainstream nitrification process.” Joint Claim Construction and Prehearing Statement (filing [50](#) at CM/ECF 1).

¹⁹ “The ‘mainstream’ is the wastewater stream flowing through the wastewater treatment plant. Any stream other than the mainstream, auxiliary to treatment of the wastewater stream, is a ‘sidestream.’” Markman Order (filing [80](#) at CM/ECF 3). Basically, the “mainstream” is the top line of the particular process and system design illustrated by Figure 2; the other lines shown in Figure 2, including the return activated sludge line **64**, are “sidestreams.” Markman Order (filing [80](#) at CM/ECF 24).

and in the process producing the supplemental biological nitrifiers in the sidestream biological nitrification system;²⁰

(d) transferring the supplemental biological nitrifiers produced in the sidestream nitrification system to the mainstream nitrification process where the supplemental nitrifiers assist in nitrifying the wastewater passing through the mainstream nitrification process; and

(e) maintaining sludge age within the mainstream nitrification process at a value of less than 200% of the critical sludge age of a conventional nitrification process.

(Filing [61-1](#) at CM/ECF 12-13) (underlining supplied).

Defendants argue there is no infringement of step (b) of Claim 18 because no settled sludge is returned from the “final clarifier” (the “secondary settling tank” **60** in Figure 2 of the '009 Patent), to the “mainstream nitrification process” (the aerobic zone of the “mainstream biological treatment” area **14** in Figure 1 of the '009 Patent; the “aeration tank” **56** in Figure 2). Defendants’ evidence indicates that all of the settled sludge is either sent to the “sidestream biological nitrification system” (the “sidestream biological nitrification zone” **13** in Figure 1; **78** in Figure 2) or else disposed of (**74** in Figure 2). In other words, there is no “return activated sludge” line (**64** in Figure 2) at the Theresa Street Wastewater Treatment Facility.

Defendants argue there also is no infringement of step (d) of Claim 18 because the supplemental biological nitrifiers produced in the “sidestream nitrification system” (the “sidestream biological nitrification zone” **13** in Figure 1; **78** in Figure 2) are not transferred to the “mainstream nitrification process” (the aerobic zone of the “mainstream biological treatment” area **14** in Figure 1; the “aeration tank” **56** in

²⁰ A “sidestream biological nitrification system” is “a system in which nitrification occurs (i.e., ammonia nitrogen, NH₃—N, is converted to nitrite or nitrate, both referred to as NO_x) that is separate from the zone in which nitrification occurs during the mainstream treatment process.” Markman Order (filing [80](#) at CM/ECF 3).

Figure 2). Defendants' evidence shows that the supplemental nitrifiers are directed to the "mainstream inlet line" (54 in Figure 2) at the Theresa Street Wastewater Treatment Facility.

Finally, Defendants argue that the '009 Patent is invalid for indefiniteness because the preamble to Claim 18 refers to an "activated sludge biological wastewater treatment process," and Plaintiffs allegedly have objected that the phrase "does not make sense." However, the evidence does not support Defendants' argument.

IV. Discussion

"The court shall grant summary judgment if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." [Fed. R. Civ. P. 56\(a\)](#). "The non-moving party receives the benefit of all reasonable inferences supported by the evidence, but has 'the obligation to come forward with specific facts showing that there is a genuine issue for trial.'" [Atkinson v. City of Mountain View](#), 709 F.3d 1201, 1207 (8th Cir. 2013) (quoting [Dahl v. Rice Cnty.](#), 621 F.3d 740, 743 (8th Cir. 2010)).

A. Alleged Infringement of the '009 Patent

"Infringement, either literal or under the doctrine of equivalents, is a question of fact." [Brilliant Instruments, Inc. v. GuideTech, LLC](#), 707 F.3d 1342, 1344 (Fed. Cir. 2013). "The burden is always on the patent holder to show infringement." [Schinzing v. Mid-States Stainless, Inc.](#), 415 F.3d 807, 813 (8th Cir. 2005).

"To establish literal infringement, every limitation set forth in a claim must be found in an accused product, exactly." [Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.](#), 699 F.3d 1340, 1356 (Fed. Cir. 2012) (quoting [Southwall Techs., Inc. v. Cardinal IG Co.](#), 54 F.3d 1570, 1575 (Fed. Cir. 1995)). "If any claim limitation is absent from the accused device, there is no literal infringement as a

matter of law.” *Cephalon, Inc. v. Watson Pharmaceuticals, Inc.*, 707 F.3d 1330, 1340 (Fed. Cir. 2013).

“To find infringement under the doctrine of equivalents, any differences between the claimed invention and the accused product must be insubstantial.” *Brilliant Instruments, Inc.*, 707 F.3d at 1346. “One way of proving infringement under the doctrine of equivalents is to show, for each claim limitation, that the accused product ‘performs substantially the same function in substantially the same way with substantially the same result as each claim limitation of the patented product.’” *Id.* at 1347 (quoting *Crown Packaging Tech., Inc. v. Rexam Beverage Can Co.*, 559 F.3d 1308, 1312 (Fed. Cir. 2009)).

1. Claim 18(b)

It is undisputed that in the operation of the Theresa Street Facility, no settled sludge is returned to the “mainstream treatment process” from a final clarifier. The settled sludge is either disposed of or sent to a “prenitrification basin” that satisfies the definition of a “sidestream biological nitrification system.” Because a “mainstream treatment process” specifically “excludes any sidestream or sidestream treatment process,” Markman Order (filing 80 at CM/ECF 3), it is evident that element (b) of Claim 18 is missing in Defendants’ system. Thus, there is no literal infringement of the ’009 Patent.

Plaintiffs’ unsworn statement, made “[u]pon information and belief,” that “most of the settled sludge from the final clarifiers at the Theresa Street Facility is returned to the mainstream treatment process” (filing 95-5 at CM/ECF 2, Response to Request for Admission No. 4), does not create a genuine issue of material fact. Plaintiffs have denied “that the Theresa Street Facility directs all of the settled sludge (that is not excess or waste sludge) from the final clarifier to a sidestream biological nitrification system,” stating that “[t]his contradicts a WEFTEC (Water Environment Federation’s Annual Technical Exhibition and Conference) paper and statements previously made

by representatives of the Theresa Plant Facility” (filing [95-5](#) at CM/ECF 2, Response to Request for Admission No. 5), but Defendants’ evidence establishes that the system proposed in the paper was never constructed. While Plaintiffs’ brief in support of their Rule 56(d) motion suggests that HDR representatives stated differently during a meeting with Plaintiffs’ representatives on May 6, 2008, Plaintiffs have failed to present any admissible evidence regarding the purported admissions.

Plaintiffs have also failed to present any evidence showing that the Theresa Street Facility infringes the ’009 Patent under the doctrine of equivalents. Plaintiffs have the “evidentiary burden of demonstrating by particularized testimony that the accused [system] perform[s] substantially the same function in substantially the same way to obtain the same result as the claimed system.” [American Calcar, Inc. v. American Honda Motor Co., Inc.](#), 651 F.3d 1318, 1338 (Fed. Cir. 2011). “Such evidence must be presented on a limitation-by-limitation basis.” [Id. at 1339](#) (quoting [Texas Instruments, Inc. v. Cypress Semiconductor Corp.](#), 90 F.3d 1558, 1567 (Fed. Cir. 1996)). “The same rule applies in the summary judgment context.” [Id.](#) (citing [AquaTex Indus., Inc. v. Techniche Solutions](#), 479 F.3d 1320, 1326 (Fed. Cir. 2007)).

It follows that Defendants are entitled to summary judgment on Plaintiffs’ claim of literal or equivalents patent infringement. Defendants are also entitled to partial summary judgment on their counterclaim and a declaration non-infringement with respect to Claim 18(b) of the ’009 Patent.

2. Claim 18(d)

Defendants additionally contend that element (d) of Claim 18 is absent in the Theresa Street Facility because supplemental biological nitrifiers are not transferred from the sidestream to the “mainstream nitrification process.” Defendants note that the court, adopting a narrow definition proposed by Plaintiffs, construed the phrase “mainstream nitrification process” to include only “[t]he portion of the mainstream treatment process in which mainstream wastewater is nitrified, . . . [*i.e.*] the aerobic

treatment zone(s).” Markman Order (filing [80](#) at CM/ECF 2). Defendants’ evidence shows that “[a]ny supplemental nitrifiers produced in the sidestream nitrification system at the Theresa Street Facility are transferred to the mainstream inlet line”; that “the mainstream inlet line is an area where raw sewage is combined with the flow from the sidestream nitrification system”; and that “[a]fter the raw sewage combines with the flow from the sidestream nitrification system at the mainstream inlet line, the waste moves to a *non-oxic* denitrification treatment area.” (Declaration of Ron Sova dated May 17, 2013, ¶¶ 8-10 (filing [100-2](#) at CM/ECF 2)) (emphasis supplied).

When Plaintiffs were requested to “[a]dmit that the supplemental biological nitrifiers produced in the sidestream biological nitrification system at the Theresa Street Facility are transferred to the mainstream inlet line,” they objected that the request “is vague and ambiguous in that it appears to imply that the mainstream inlet line is part of the nitrification process. The mainstream inlet line is merely a structural component and is neither part of the nitrification process nor a part of Patent 5,811,009.” (Filing [95-5](#) at CM/ECF 3, Response to Request for Admission No. 12).²¹ Plaintiffs further stated that “[t]he nitrifiers produced in the sidestream nitrification process at the Theresa Street Facility are transferred to the mainstream biological process, which includes the mainstream nitrification process.” (Filing [95-5](#) at CM/ECF 3, Response to Request for Admission No. 11).

Figure 2 of the ’009 Patent provides some support for Plaintiffs’ position, as it depicts a line that is used to transfer “nitrified dewatering liquid” from the “sidestream biological nitrification zone” to the “mainstream inlet line.” The accompanying description states:

²¹ However, the mainstream inlet line is part of the “mainstream,” which has been defined as “the wastewater stream flowing through the wastewater treatment plant.” Markman Order (filing [80](#) at CM/ECF 3). “Basically, the ‘mainstream’ is the top line of the particular process and system design illustrated by Figure 2; the other lines shown in Figure 2 . . . are sidestreams.” Markman Order (filing [80](#) at CM/ECF 24).

[S]upplemental biological nitrifiers are produced in the sidestream nitrification system **78** and these supplemental nitrifiers are conveyed to the mainstream [inlet line **54**] via line **84**. There the supplemental nitrifiers combined with nitrifiers produced in the aeration tank **56** and the combined nitrifiers act to effectuate complete and effective nitrification in the mainstream and particularly in aeration tank **56** of the example shown. It should be also noted that excess biological sludge full of nitrifiers held in the sidestream nitrification system **78** can be conveyed to the mainstream and particularly through the aeration tank **56** via line **80**.

(’009 Patent, 6:13-23 (filing [58-2](#) at CM/ECF 9)) (boldface in original).²² Similarly, the description related to Figure 1 states:

These biological nitrifiers are referred to in some cases herein as supplemental nitrifiers because they are directed through line **11** [corresponding to line **80** in Figure 2] or **18** [corresponding to line **84** in Figure 2] back to the mainstream **12**. Here, the supplemental nitrifiers combine with [nitrifiers?] produced in the mainstream to greatly enhance and accelerate the mainstream nitrification process. Excess biological sludge full of nitrifiers accumulated in the sidestream nitrification zone **13** can be directed to the mainstream treatment zone **14** via line **11**.

(’009 Patent, 6:65-5:6 (filing [58-2](#) at CM/ECF 8-9)) (boldface in original).

Supporting Defendants’ construction, on the other hand, is the fact that two other independent claims of the ’009 Patent describe the transfer of supplemental

²² It should be noted that the “particular process and system design” illustrated in Figure 2 most closely corresponds to another independent claim of the ’009 Patent, Claim 11, which includes the steps of “(e) directing another portion of the settled sludge separated from the influent wastewater to a digester and subjecting that settled sludge to digestion to form digested sludge; (f) separating the digested sludge into dewatered sludge and dewatering liquid; [and] (g) directing the dewatering liquid into a sidestream biological nitrification system to nitrify the same and to form nitrifiers” (’009 Patent, 13:35-43 (filing [58-2](#) at CM/ECF 13)). Claim 18 does not require the use of a digester or the separation of the digested sludge.

nitrifiers in significantly different terms than Claim 18. Thus, Claim 1(e) refers to “transferring the supplemental nitrifiers from the sidestream biological nitrification system to the *mainstream treatment process* where the supplemental nitrifiers assist in nitrifying the influent wastewater passing through the *mainstream treatment process*” (’009 Patent, 12:45-49 (filing [58-2](#) at CM/ECF 12)) (emphasis supplied),²³ while Claim 11(h) speaks of “transferring the nitrifiers formed in the sidestream back to the *mainstream* and mixing the nitrifiers with the influent wastewater in the *mainstream* such that the nitrifiers produced in the sidestream contribute to the nitrification process in the *mainstream*” (’009 Patent, 13:44-49 (filing [58-2](#) at CM/ECF 13)) (emphasis supplied).²⁴ Claim 18(d), of course, requires “transferring the supplemental biological nitrifiers produced in the sidestream nitrification system

²³ Consistent with this language, the first step of Claim 1 (element (a)) is “directing influent wastewater through a *mainstream treatment process* including at least one aerobic treatment zone and a final clarifier that separates purified supernatant from settled sludge” (’009 Patent, 12:29-32 (filing [58-2](#) at CM/ECF 12)) (emphasis supplied). Similarly, Claim (1)(b) requires “returning at least a portion of the settled sludge from the final clarifier to the *mainstream treatment process*” (’009 Patent, 12:33-34 (filing [58-2](#) at CM/ECF 12)) (emphasis supplied), and Claim 1(f) requires “maintaining the sludge age within the *mainstream treatment process* at a value of less than 200% of the critical sludge age for a conventional nitrification process” (’009 Patent, 12:50-53 (filing [58-2](#) at CM/ECF 12)) (emphasis supplied)). Claim 1 does not use “mainstream” as a stand-alone term, nor does it use the phrase “mainstream nitrification process.”

²⁴ Consistent with this language, the first two steps of Claim 11 (elements (a) and (b)) are “directing influent wastewater into and through a *mainstream*” and “treating the influent wastewater in the *mainstream* by nitrifying the same in an aerobic zone” (’009 Patent, 13:25-28 (filing [58-2](#) at CM/ECF 13)) (emphasis supplied). Likewise, Claim 11(d) requires “returning a portion of the settled sludge back to the *mainstream* where it is mixed with the influent wastewater” (’009 Patent, 13:32-34 (filing [58-2](#) at CM/ECF 13)) (emphasis supplied), and Claim 11(i) requires “maintaining sludge age within the *mainstream* to a value of less than 200% of the critical sludge age for a conventional nitrification process” (’009 Patent, 13:49-52 (filing [58-2](#) at CM/ECF 13)) (emphasis supplied). The phrases “mainstream treatment process” and “mainstream nitrification process” do not appear in Claim 11.

to the *mainstream nitrification process* where the supplemental nitrifiers assist in nitrifying the wastewater passing through the *mainstream nitrification process*” (’009 Patent, 14:26-30 (filing [58-2](#) at CM/ECF 13)) (emphasis supplied).

In the absence of any evidence to the contrary, it must be presumed that the use of different terms in the claims connotes different meanings. See [CAE Screenplates Inc. v. Heinrich Fiedler GmbH & Co. KG](#), 224 F.3d 1308, 1317 (Fed. Cir. 2000). It is also a familiar principle that “[a] word or phrase used consistently throughout a patent claim should be interpreted consistently.” *Id.* (quoting [Phonometrics, Inc. v. Northern Telecom, Inc.](#), 133 F.3d 1459, 1465 (Fed. Cir. 1998)).

Following the *Markman* hearing, the court separately defined “mainstream,” “mainstream treatment process,” and “mainstream nitrification process,” in each instance adopting the definition of the term or phrase that had been proposed by Plaintiffs (filings [50](#), [80](#)). The court was not previously asked to construe the term “transferring” that is used in Claim 18(d) (as well as in Claims (1)(e) and 11(h)), but the ordinary meaning of “transfer” is “[t]o convey or take from one place . . . to another.” Oxford English Dictionary (2d ed.1989), available at <http://www.oed.com>; see also Black’s Law Dictionary (9th ed. 2009) (defining “transfer” “as meaning “[t]o convey or remove from one place . . . to another”).

At the Theresa Street Facility, supplemental nitrifiers are transferred from the sidestream to the “mainstream.” This is the action described in Claim 11(h)—not the action described in Claim 18(d). Supplemental nitrifiers may eventually enter the “mainstream nitrification process,” after first passing through an anoxic portion of the “mainstream treatment process,” but this indirect routing cannot reasonably be found to satisfy Claim 18(d)’s specific requirement that the supplemental nitrifiers be transferred from the sidestream to the “mainstream nitrification process.” Because Plaintiffs have failed to provide any evidence of equivalence regarding these methods of transferring supplemental nitrifiers, Defendants are entitled to summary judgment and a declaration non-infringement with respect to Claim 18(d) of the ’009 Patent.

B. Alleged Invalidity of the '009 Patent

A patent is presumed valid, and the burden of establishing the invalidity of a patent or any claim thereof rests on the party asserting such invalidity. See [35 U.S.C. § 282\(a\)](#). An invalidity defense must be proved by clear and convincing evidence. [Microsoft Corp. v. i4i Ltd. Partnership](#), 131 S.Ct. 2238, 2242 (2011).

Defendants argue that “[b]ecause the preamble to each independent claim (1, 11, and 18) of the ’009 Patent calls for a ‘biological nitrification process,’ which, according to m²t, ‘does not make sense,’ the entire patent is invalid” (filing [99](#) at CM/ECF 30). This arguments fails because the evidence only shows that when Plaintiffs in discovery were requested to admit “that Plaintiffs are accusing the Theresa Street Facility of being an activated sludge biological wastewater treatment process,” Plaintiffs objected that the request for admission “does not make sense” because “[t]he Theresa Street Facility is not a ‘process’” but, rather, “a wastewater treatment plant” (filing [95-5](#) at CM/ECF 1). Plaintiffs did not admit that the phrase “biological nitrification process” is ambiguous; they merely objected to the phrasing of Defendants’ request for admission. Plaintiffs’ objection, which may not even be well-founded, does not constitute clear and convincing evidence that the ’009 Patent is invalid for indefiniteness. Defendants’ motion for summary judgment on their counterclaim for a declaration of invalidity will be denied.

V. Conclusion

Plaintiffs’ motion for a continuance or other relief under Federal Rule of Civil Procedure 56(d) will be denied for lack of a sufficient showing. Defendants’ motion for summary judgment will be granted in part (as to non-infringement) and denied in part (as to invalidity). The undisputed evidence establishes that Defendants’ Theresa Street Wastewater Treatment Facility does not literally infringe elements (b) and (d) of Claim 18 of the ’009 Patent, and there is no proof of infringement of Claim 18

under the doctrine of equivalents. Defendants' evidence fails to establish by clear and convincing evidence that the '009 Patent is invalid.

Accordingly,

IT IS ORDERED:

1. Filing [109](#), Plaintiffs' Rule 56(d) motion to deny as premature, or in the alternative, continue Defendants' motion for summary judgment, is denied in all respects.
2. Filing [98](#), Defendants' motion for summary judgment of invalidity and non-infringement of U.S. Patent No. 5,811,009, is granted in part and denied in part, as follows:
 - a. The motion is granted to the limited extent that the court hereby dismisses Plaintiffs' claims with prejudice and declares that the Theresa Street Wastewater Treatment Facility does not infringe elements (b) and (d) of Claim 18 of the '009 Patent.
 - b. In all other respects, the motion is denied.
3. This matter is referred to Magistrate Judge Cheryl R. Zwart for further progression, as appropriate.

July 31, 2013.

BY THE COURT:

Richard G. Kopf

Senior United States District Judge

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